

PITTSBURGH, FORT WAYNE & CHICAGO RAILWAY, BEAVER RIVER BRIDGE
(Pennsylvania Railroad, Beaver River Bridge)
Pennsylvania Historic Railroad Bridges Recording Project
Spanning Beaver River along the line of Second Ave.
New Brighton
Beaver County
Pennsylvania

HAER No. PA-511

HAER
PA
4-NBRIG,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
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Location: Spanning Beaver River along the line of Second Ave., New Brighton, Beaver County, Pennsylvania.

USGS Quadrangle: Beaver, Pennsylvania (7.5-minute series).

UTM Coordinates: 17/557440/4509870

Date of Construction: 1926.

Basis for Dating: Construction drawings.

Date of Alteration: Unknown.

Designer: J. F. Leonard (Engineer of Bridges & Buildings, Pennsylvania Railroad).

Fabricator / Builder: Mount Vernon Bridge Co. (Mount Vernon, Ohio).

Present Owner: Norfolk Southern Railroad.

Present Use: Railroad bridge.

Structure Type: Riveted Warren deck truss; riveted deck girder.

Significance: The Pittsburgh, Fort Wayne & Chicago Railway's Beaver River Bridge includes several unusually shallow and heavy skewed Warren deck trusses. The interesting and well-documented history of this crossing includes a rare instance of highway and railroad bridges trading places.

Historian: Justin M. Spivey, April 2001.

Project Information: The Historic American Engineering Record (HAER) conducted the Pennsylvania Historic Railroad Bridges Recording Project during 1999 and 2000, under the direction of Eric N. DeLony, Chief. The project was supported by the Consolidated Rail Corporation (Conrail) and a grant from the Pennsylvania Historical and

Museum Commission (PHMC). Justin M. Spivey, HAER engineer, researched and wrote the final reports. Preston M. Thayer, historian, Fredericksburg, Virginia, conducted preliminary research under contract. Jet Lowe, HAER photographer, and Joseph E. B. Elliott, contract photographer, Sellersville, Pennsylvania, produced large-format photographs.

Description and History

The present railroad bridge between New Brighton and Beaver Falls dates to 1926, but the interesting and well-documented history of the crossing begins much earlier. Inspired by Chicago's promise as an inland port and distribution point for Great Plains trade, New York and Pennsylvania investors raced to complete railroad links with the emerging city. The Ohio & Pennsylvania Railroad, incorporated on 11 April 1849, was empowered to build a route between Pittsburgh and the Ohio state line. After crossing the Allegheny River on its way out of Pittsburgh, the Beaver River was the next major engineering challenge. The railroad reached New Brighton on the east bank in 1851, but that remained the end of the line until a bridge could be completed. Two years later, trains were able to cross a single-track wooden truss structure into Beaver Falls and continue along the west bank into Ohio.¹

The Ohio & Pennsylvania merged with other railroads on 29 July 1856 to form the Pittsburgh, Fort Wayne & Chicago Railroad. This company completed tracks into Chicago in 1858, but shortly thereafter declared bankruptcy and was reorganized as the Pittsburgh, Fort Wayne & Chicago Railway (PFW&C). Although still heavily in debt to its principal investor, the Pennsylvania Railroad (PRR), PFW&C began negotiating a merger with the competing Erie Railway. In response to this act of betrayal, PRR threatened to call in its bonds and forced PFW&C into a 999-year lease effective July 1869.² (PFW&C maintained its own identity, however, letting contracts under its own name and publishing its own annual reports until 1972.) Financially solvent from the lease payments, PFW&C was able to replace its Beaver River bridge with a single-track iron truss structure. Growing traffic justified a second track, supported on a third line of trusses, in 1874.³ Because of rapidly increasing train loads, PFW&C needed a new bridge again in 1887. The Penn Bridge Co. of Beaver Falls erected four two-track deck trusses on stone piers built by M. Gwinne of Pittsburgh. In 1906, Fort Pitt Bridge Works of Pittsburgh replaced one truss with two riveted plate-girder spans to clear a new Pittsburgh, Youngstown & Ashtabula Railway line on the east bank of the river.⁴

Given continuing increases in railroad loading, the 1887 structure must have been approaching the end of its useful life in 1918. The borough of New Brighton passed an ordinance on 1 November of that year, requiring PFW&C to remove its tracks from Fifth Avenue within five years. This legislation was likely inspired by grade crossing elimination ordinances passed in larger cities such as Philadelphia and Chicago during the 1890s. It seems that PFW&C management forgot about or ignored New Brighton's demands, however, given the contents of an internal memorandum dated just five days before the deadline.⁵ PRR engineering staff, who

designed major structures for PFW&C, immediately went to work developing plans for a new bridge along a Second Avenue alignment. The railroad announced its plans in February 1924 and spent the better part of that year pursuing local, state, and federal approval.

In a rare instance of highway and railroad bridges trading places, the old PFW&C bridge found new use as part of a deal to eliminate a privately owned toll bridge obstructing the proposed route. The railroad had the good fortune to step into an existing dispute between Beaver County commissioners and the toll bridge's owner, the Overgrade Bridge Company. In December 1923, the commissioners offered \$90,000 to purchase the structure, which was not only the county's last remaining toll crossing, but also part of the Beaver Valley Traction Company's route. When Overgrade executives refused, the county began condemnation proceedings.⁶ PFW&C defused the volatile situation in April 1924 by offering its old bridge, complete with a new roadway and streetcar tracks, for the price of \$90,000, effectively an even trade.⁷ Because the railroad made its offer through the traction company, it seems likely that operating rights over a county-owned Overgrade Bridge were the real stumbling block. Once the traction company had guaranteed operating rights over a remodeled railroad bridge, the sale went through later that year. A second obstruction to the new bridge, the Pittsburgh & Lake Erie Railroad (P&LE) station on the west bank, was more easily removed. At the end of July 1924, PFW&C agreed to pay \$150,000 in property damages, which P&LE used to move its building 200'-0" upstream in April 1925.⁸

Plans for a barge canal connecting Lake Erie and the Ohio River via the Beaver River were less obvious but more troublesome than the physical obstructions. PFW&C's original scheme had five piers in the river, one of which blocked the proposed canal, supporting six presumably equal deck truss spans. Curiously, the Pennsylvania Water and Power Resources Board approved this plan in February 1924.⁹ Navigation interests protested at a U.S. War Department hearing on 11 March, demanding a longer span over the canal and through trusses instead of deck trusses.¹⁰ PFW&C agreed to widen one span to provide a 140'-0" horizontal clearance, but the deck trusses remained. The Secretary of War and the Water and Power Resources Board approved the revised plans in May and June 1925, respectively.¹¹ Their permits give permission to build a four-track bridge, indicating that PFW&C was planning ahead. When construction began on the piers shortly thereafter, they were only two tracks wide.

The bridge has a total length of 1,221'-0" and consists of five riveted Warren deck truss spans plus riveted deck girders on the western approach. Concrete piers, incised with horizontal lines to resemble coursed stone, are skewed approximately 42 degrees to the bridge's axis. The Mount Vernon Bridge Company fabricated the superstructure, and erected it during the 1926 construction season. From the east end, the deck truss span lengths are 122'-0", 219'-0", 164'-0", and two at 143'-0". The longest span, over the proposed canal, is extremely shallow compared to its length, measuring only 22'-0" between the centers of upper and lower chords.¹² This dimension was dictated by the vertical clearance over the canal and the railroad's existing grade, but results in an inefficient aspect ratio of about 1 to 10.

PFW&C officials held a dedication ceremony for the new bridge on 15 June 1926, but an internal memorandum noted that it would not be ready for trains until 10 September.¹³

Remodeling of the old bridge proceeded quickly, with its own dedication ceremony held on 15 December. This structure — the PFW&C bridge from 1887 — remained in service until 1985, when it was replaced by a prestressed concrete girder bridge.¹⁴ The PFW&C bridge from 1926, however, still carries Norfolk Southern Railroad freight trains.

Notes

1. Thomas T. Taber III, *Railroads of Pennsylvania: Encyclopedio ond Atlos* (Muncy, Pa.: Thomas T. Taber III, 1987), 410.
2. Pennsylvania Railroad Co., *Twenty-third Annual Report of the Board of Directors of the Pennsylvania Railroad Co. to the Stockholders, February 15, 1870* (Philadelphia: E. C. Markley & Son, 1870), 15-16; see also James E. Vance, Jr., *The North American Railroad: Its Origin, Evolution, ond Geography* (Baltimore: Johns Hopkins Univ. Press, 1995), 132.
3. Coverdale & Colpitts, Consulting Engineers, *The Pennsylvania Railroad Company, Description of Important Bridges ond Stotions* (New York, 1945), 33, typescript in folder "PRR Office of Secretary, Studies by Consultants and Publisbed Reference Materials, 1855-1958," Box 1, Penn Central Railroad Records, Manuscript Group 286, Pennsylvania State Archives, Harrisburg, Pa.
4. "Bridge Contracts," *Engineering News ond American Contract Journal* 18 (2 July 1887): 15; cf. Pennsylvania Lines West of Pittsburgh, "P. F. W. & C. Ry. Eastern Division Bridge No. 29 over Beaver River at New Brighton, Pa." (26 May 1906), milepost 29.25, region/division/branch 020202, aperture card files, Consolidated Rail Corp., Philadelphia, Pa. [hereinafter cited as Conrail aperture cards; transferred to Norfolk Southern Railway Co., Atlanta, Ga.].
5. J. F. Patterson, General Superintendent, PRR Central Region, to M. W. Clement, General Manager, 26 Oct. 1923, in folder 2328, "Rochester-Beaver Falls Change of Line," General Manager's Files, Central Region, Box 167, Pennsylvania Railroad Records, Historical Collections and Labor Archives, Paterno Library, Pennsylvania State University, State College, Pa. [hereinafter cited as Change of Line File].
6. "1,000 Citizens Petition Court for Condemnation of the Overgrade Bridge," *Beaver Folls Tribune* (15 Mar. 1924), newspaper clipping file, Beaver Falls Historical Society, Carnegie Free Library, Beaver Falls, Pa. [hereinafter cited as BFHS Clipping File].
7. "New Bridge Offered County at the Price Asked for Old One," *Beaver Folls Tribune* (4 Apr. 1924), BFHS Clipping File.
8. R. Trimble, "Memorandum of conversation between Mr. J. C. Grooms, Real Estate Agent of the Pittsburgh & Lake Erie Railroad, and R. Trimble, Asst. Chief Engineer, Pennsylvania Railroad, July 31, 1924, with reference to matters at Beaver Falls," in Change of Line File; see also Cheryl W. Beck, ed., *The Twentieth Century History of Beaver County, Pennsylvania, 1900-1988* (Beaver, Pa.: County Historical Research & Landmarks Foundation, 1989), 56.
9. Clipping from *Pittsburgh Chronicle Telegraph* (15 Feb. 1924) in Change of Line File.
10. "Beaver Bridge Protest Hearing to be Held at 10 o' Clock Tuesday," from unidentified newspaper (10 Mar. 1924), in BFHS Clipping File.

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11. "U.S. Engineers Approve Plans for New Bridge," *Pittsburgh Gazette-Times* (19 May 1924), and Water & Power Resources Board to PRR, 2 Jun. 1924, both in Change of Line File.
12. Mount Vernon Bridge Co., "Penna. R. R. System, P. F. W. & C. Ry. ... Bridge over Beaver River between New Brighton & Beaver Falls, Pa., Span No. 2 Erection Plan" (14 Aug. 1925), in Conrail aperture cards.
13. Beck, *Twentieth Century History*, 56; cf. H. E. Newcomet, General Superintendent, to J. A. Appleton, Superintendent, 7 Sep. 1926, in Change of Line File.
14. John Matthews, "Bridging the Beaver," in History Book Committee, *Beaver Falls Area Centennial: Historical Salute to the Centuries ... 1868-1968* (Beaver Falls, Pa.: News-Tribune, 1968), 59; cf. "Just Dropping In," *Beaver County Tribune* (6 Sep. 1985), in BFHS Clipping File.

Acknowledgments

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